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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,180	09/28/2006	Djamschid Amirzadeh-Asl	DNAG-320	5207

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EXAMINER	
COHEN, STEFANIE J	

ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/578,180	AMIRZADEH-ASL ET AL.	
	Examiner	Art Unit	
	STEFANIE COHEN	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 July 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31-48* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *31-48* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 31-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doliwa (4398946) in view of Coyle et al (3507644).

Doliwa teaches a method of homogenizing cast iron melts by adding compacts comprising hydrocarbon compounds to iron slag. Doliwa, col. 3 lines 58-63, teaches the compacts for homogenizing of the melt contain naphthalene or carbozol, which are known in the art as hydrocarbon plastics.

Although Doliwa teaches adding compacts comprising naphthalene to slag, Doliwa does not teach adding inorganic solids.

Coyle, col. 3, teaches adding TICO 90, which is a titanium additive to a grey iron melt to improve the production of gray iron. Coyle teaches associating the titanium with a carrying element for adding to the melt (col. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to add TICO 90 as taught by Coyle into the hydrocarbon containing plastic compact as taught by Doliwa because Coyle teaches titanium acts as a scavenger for nitrogen and tends to eliminate pin holes in iron casting since an inert titanium nitride is precipitated which is generally recognized as a harmless inclusion. Titanium further promotes the formation of a finer grain structure, sounder castings, and improves physical properties, particularly strength and machinability. Providing the titanium and hydrocarbon containing compact together as a mixture to the melt would have been obvious to one of ordinary skill in the art as Coyle teaches associating the titanium with a carrying element for adding to the melt.

Regarding claims 32-33, Coyle, col. 3 lines 34-28, teaches the TICO 90 is preferably sized to about 20 mesh (.841 mm).

Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to obtain a close to uniform particle size to ensure a uniform grain structure.

Regarding claim 34-35, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the amount of TICO 90 present in the slag because Coyle teaches that relative proportions of the titanium containing material may be varied depending upon the titanium content of the titanium containing material.

Further, Coyle, teaches two typical compositions for a briquette comprises 5% and 5% by weight of TICO 90.

Regarding claim 36-37, Coyle, teaches a TICO 90 which is a synthetic titanium oxide additive available from Frankel and Co Inc.

Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to use synthetic titanium oxide to ensure a high percentage of titanium oxide in the final product compared to natural titanium oxide.

Regarding claim 38, Doliwa teaches using carbazol as the hydrocarbon compound which contains nitrogen.

Regarding claim 39, it would have been obvious to one of ordinary skill in the art at the time of the invention to use old plastic for the hydrocarbon compounds to save money on producing the product as a whole.

Regarding claim 40, Doliwa, col. 3 lines 58-64, teaches the compacts can contain carbazol or naphthalene in a solid form. It would have been obvious to one of ordinary skill in the art at the time of the invention to mix in the TICO 90 as taught by Coyle with a solid carbazol compound to simplify mixing techniques.

Regarding claim 41, Doliwa, col. 3 lines 58-64, teaches the compacts can contain carbazol or naphthalene in an oily form. It would have been obvious to one of ordinary skill in the art at the time of the invention to mix in the TICO 90 as taught by Coyle with an oily carbazol compound to assure that TICO 90 is evenly dispersed throughout the mixture.

Regarding claim 42, Doliwa teaches adding compacts to a slag where the compacts are solid objects.

Regarding claim 43, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the shape of the compact comprising TICO 90 and hydrocarbon plastic by grinding or shredding to obtain maximum strength and machinability of the final product.

Claims 44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doliwa (4398946) in view of Coyle et al (3507644) and further in view of Jones et al (6793708).

Although Doliwa in view of Coyle teaches a hydrocarbon/titanium oxide flux introduced into a hot melt, neither teaches introducing the flux by injection.

Jones teaches a slag composition where additives are injected into the slag to control specific properties of the slag.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the injection method as taught by Jones to introduce the flux as taught by Doliwa in view of Coyle into the hot melt because the Jones method can easily monitor the amount of additives injected into the slag and therefore obtain maximum strength and machinability of the final product.

Regarding claim 45, Jones, col. 6 lines 55-60, teaches any means known in the art can be used to introduce materials to the slag within the furnace. It would have been

obvious to one of ordinary skill in the art at the time of the invention that any conventional method of injecting a flux in the slag as taught by Doliwa and Colye can be used such as introducing the flux in the form of lumps as long as the method distributes the flux uniformly throughout the slag.

Claims 46-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doliwa (4398946) in view of Coyle et al (3507644).

Doliwa teaches a method of homogenizing cast iron melts by adding compacts comprising hydrocarbon compounds to iron slag. Doliwa, col. 3 lines 58-63, teaches the compacts for homogenizing of the melt contain naphthalene or carbozol, which are known in the art as hydrocarbon plastics.

Further, Doliwa, col. 3 lines 58-64, teaches the compacts can contain carbazol or naphthalene in a solid form. It would have been obvious to one of ordinary skill in the art at the time of the invention to mix in the TICO 90 as taught by Coyle with a solid carbazol compound to simplify mixing techniques.

Although Doliwa teaches adding compacts comprising naphthalene to slag, Doliwa does not teach adding inorganic solids.

Coyle, col. 3, teaches adding TICO 90, which is a titanium additive to a grey iron melt to improve the production of gray iron.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add TICO 90 as taught by Coyle into the hydrocarbon containing plastic

compact as taught by Doliwa because Coyle teaches titanium acts as a scavenger for nitrogen and tends to eliminate pin holes in iron casting since an inert titanium nitride is precipitated which is generally recognized as a harmless inclusion. Titanium further promotes the formation of a finer grain structure, sounder castings, and improves physical properties, particularly strength and machinability.

Further, the inorganic solids adhering to the plastic surface to form a mixture is an inherent characteristic of the flux and therefore does not further limit the claim.

Regarding claim 47, Doliwa, col. 3 lines 58-64, teaches the compacts can contain carbazol or naphthalene in a solid form. It would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the shape such as granules of the compact comprising TICO 90 and hydrocarbon plastic by grinding or shredding to obtain maximum strength and machinability of the final product.

Regarding claim 48, Doliwa, col. 3 lines 58-64, teaches the compacts can contain carbazol or naphthalene in a solid form. It would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the shape such as granules of the compact comprising TICO 90 and hydrocarbon plastic by grinding or shredding to obtain maximum strength and machinability of the final product.

Further, Doliwa teaches compacts comprising the plastic hydrocarbons are produced before being introduced into the slag.

It would have been obvious to one of ordinary skill in the art at the time of the invention to introduce the TICO 90 as taught by Coyle during the production of the

plastic hydrocarbons to assure the TICO 90 is evenly distributed throughout the compact.

Claim 31-37 and 39-48 1s rejected under 35 U.S.C. 103(a) as being unpatentable
over Neuer et al (5376160) in view of Coyle et al (3507644).

Neuer teaches a wire filling which contains a compound that splits off gas based on an organic polymer such as polyethylene. The polyethylene is then injected into a slag.

Although Neuer teaches adding compacts comprising naphthalene to slag, Neuer does not teach adding inorganic solids.

Coyle, col. 3, teaches adding TICO 90, which is a titanium additive to a grey iron melt to improve the production of gray iron.

It would have been obvious to one of ordinary skill in the art at the time of the invention to add TICO 90 as taught by Coyle into the polyethylene wire filling because Coyle teaches titanium acts as a scavenger for nitrogen and tends to eliminate pin holes in iron casting since an inert titanium nitride is precipitated which is generally recognized as a harmless inclusion. Titanium further promotes the formation of a finer grain structure, sounder castings, and improves physical properties, particularly strength and machinability. Providing the titanium and polyethylene together as a mixture to the melt would have been obvious to one of ordinary skill in the art as Coyle teaches associating the titanium with a carrying element for adding to the melt.

Regarding claims 32-33, Coyle, col. 3 lines 34-28, teaches the TICO 90 is preferably sized to about 20 mesh (.841 ram). Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to obtain a close to uniform particle size to ensure a uniform grain structure.

Regarding claim 34-35, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the amount of TICO 90 present in the slag because Coyle teaches that relative proportions of the titanium containing material may be varied depending upon the titanium content of the titanium containing material. Further, Coyle, teaches two typical compositions for a briquette comprises 5% and 5% by weight of TICO 90.

Regarding claim 36-37, Coyle, teaches a TICO 90 which is a synthetic titanium oxide additive available from Frankel and Co Inc.

Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to use synthetic titanium oxide to ensure a high percentage of titanium oxide in the final product compared to natural titanium oxide.

Regarding claim 39, it would have been obvious to one of ordinary skill in the art at the time of the invention to use old plastic for the hydrocarbon compounds to save money on producing the product as a whole.

Regarding claim 41, it would have been obvious to one of ordinary skill in the art at the time of the invention that the same properties of the slag would be achieved if the plastic was introduced to the inorganic solids in molten form.

Regarding claim 42, both the plastic and the TICO 90 are in solid form.

Regarding claim 43, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the shape of the compact comprising TICO 90 and hydrocarbon plastic by grinding or shredding to obtain maximum strength and machinability of the final product.

Regarding claim 44, Neuer, example 1, teaches the polyethylene being injected into the slag.

Regarding claim 45, It would have been obvious to one of ordinary skill in the art at the time of the invention that any conventional method of injecting a flux in the slag such as introducing the flux in the form of lumps can be used as long as the method distributes the flux uniformly throughout the slag.

Regarding claim 46, the inorganic solids adhering to the plastic surface to form a mixture is an inherent characteristic of the flux and therefore does not further limit the claim.

Regarding claim 47, Neuer teaches the polyethylene is present in granule form.

Regarding claim 48, it would have been obvious to one of ordinary skill in the art at the time of the invention to introduce the TICO 90 as taught by Coyle during the production of the polyethylene granules to assure the TICO 90 is evenly distributed throughout the granule.

Response to Arguments

Applicant's arguments filed 7/8/2009 have been fully considered but they are not persuasive.

Doliwa, col. 3 lines 50-60, teaches the method can also be carried out by using in the compacts, as alloying agents together with the hydrocarbon components of homogenizing action, also any other alloying components customary in iron charges such as ferrosilicon, calcium silicon, ferrochromium, iron or steel chips, lime and sand. Therefore, Doliwa does teach adding inorganic solids into a liquid melt with a hydrocarbon component.

Applicant further argues there is no reason to combine the Doliwa and the Coyle references.

Doliwa teaches a method of homogenizing cast iron.

Coyle, col. 1 lines 50-62, teaches the primary object of the invention is to provide a titanium additive, such as in the form of titanium dioxide or TICO 90, which can be incorporated into conventional iron foundry practices with little or no modification of, or addition to, either the existing foundry equipment or the conventional foundry practices.

Further, another object is to provide an additive which utilizes titanium in a convenient material form and which can be associated with other addition material such as ferrosilicon, ferromanganese and ferrochome which are all taught in the Doliwa reference.

Further, the titanium additive can be used in conventional iron foundry practices and not limited to gray iron.

Although Coyle teaches titanium should be associated with a carrying element such as silicon carbide, other carrying elements can be used which are disclosed both in Doliwa and Coyle.

Further explanation is needed as to how Jones does not overcome the foregoing deficiencies.

Neuer teaches a wire filling comprising an organic polymer such as polyethylene and an inorganic material such as alumina or silica. This filling splits off gas at the application temperatures and thus causes the formation of turbulence in the metal bath which leads to a homogenization of the melt without having a detrimental effect on the composition of the melt. Melts of iron and steel come into consideration as the metal melts.

Further, Coyle, col. 1 lines 50-62, teaches the primary object of the invention is to provide a titanium additive, such as in the form of titanium dioxide or TICO 90, which can be incorporated into conventional iron foundry practices with little or no modification of, or addition to, either the existing foundry equipment or the conventional foundry practices.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEFANIE COHEN whose telephone number is (571)270-5836. The examiner can normally be reached on Monday through Thursday 9:3am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Melvin Curtis Mayes can be reached on 5712721234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Stefanie Cohen 10/15/2009

SC

October 22, 2009

/Melvin Curtis Mayes/
Supervisory Patent Examiner, Art Unit 1793